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Discussion

Dr Toni Lerut *(Leuven, Belgium).* It is a privilege for me to discuss this excellent and important presentation reporting an in-depth study on the results of what is now by far the largest series on repairs of GPEH. The conclusion is that laparoscopic repair provides excellent patient satisfaction and symptom resolution, with reoperation rates comparable to those of the best open series. Despite your obvious enthusiasm, Dr Luketich, I do have some concerns and questions.

This surgery remains to be considered as a complex and major surgery, with duration of intervention, major complication rates, and mortality figures equaling those now obtained for esophagectomy in centers of excellence, in fact 1.4% for your own center. The overall reintervention rate, including reoperation for recurrence, was 8% in this series, whereas recurrence remains as high as 15%. Although patient satisfaction reached 90%, a detailed analysis of your data indicates that postoperative symptoms such as dysphagia, heartburn, and bloating are recurring in about 1 in 4 cases, and the need for proton pump inhibitor continuation is as high as 40%. So to me it appears that we are not yet there. I have 3 questions.

First, your 30-day mortality was 1.7%, but overall 85 patients died during follow-up. Because half of the patients in your series were older than 70 years or had a CCI score of 3 or more, what were the 6-month and 1-year mortalities, which in fact reflect much more better the true postoperative mortality?

Second, Stylopoulos and Rattner in 2002, with a Markov Monte Carlo decision analytic model, calculated that for the many patients with minor symptoms, such as heartburn, bloating, and so on, a policy of watchful waiting entails a lifetime risk of development of acute symptoms requiring surgery estimated at 1.1% per year, with mortality related to emergency surgery of 5.4%. So they calculated an overall lifetime risk of dying of paraesophageal hernia in a patient managed by watchful waiting to be 1%, which is less than the 30-day mortality in your series. Given these data, and given the high comorbidity in your population, your median age of 70 years, the substantial postoperative complications and readmission rate, and the 8% mortality rate among patients older than 80 years, what according to your experience are now the guidelines for this subset of patients?

Dr Luketich. Could you just summarize that second question? I didn't quite hear the question at the end.

Dr Lerut. Given Rattner's data and the high comorbidity in your population, your median age of 70 years, your high readmission and complication rate, and the high postoperative mortality in patients older than 80 years, what are your guidelines for this subset of patients?

Dr Luketich. Guidelines for entry for elective repair?

Dr Lerut. Exactly.

Dr Luketich. I see.

Dr Lerut. Finally, the recurrence rate was 15%. Could you tell us whether in this subset of patients you performed with time subsequent barium esophagography? If so, did this show further progression of the size of such intrathoracic migration, particularly in the group of younger patients who seem to be more at risk for recurrence simply by virtue of surviving longer than the elderly group? What is the scheme, the algorithm, for follow-up in those cases?

Dr Luketich. Thank you, Dr Lerut. To the first question, the mortalities at 6 months and 1 year, I can't give you those data. We looked primarily at 30-day mortality. Certainly in looking at this group of elderly patients, there are obviously natural deaths occurring in significant numbers among these patients with time. What we did find was that if the CCI score was low and the patient was younger than 70 years, or even older than 70 years with a low CCI score, the 30-day mortality was nil. I hope that answers that question. We do have the data to look more closely at exactly which patients died of at 6 months and 1 year, but it was clear that these deaths did not appear to be related to the operation.

I'll answer the last question next, because I am not sure I understand or can answer the second question. Looking at those small radiographic recurrences, no doubt they are a significant concern. If we try and repair a hiatal hernia, an incisional hernia, or a groin hernia and have any type of hernia recurrence, we are always concerned that it is going to lead to a larger recurrence, then potential symptoms, and then reoperation. I can tell you that when we looked at that first subset of patients back in 2000, when Andrew Pierre presented those data, we had a reoperative rate of around 2%. Those patients have a follow-up now of 77 months, with a reoperation rate up to 4%. I think that may be where the rate is peaking. That is what it looks like to us; most of the recurrences that require reoperation are within 2 to 3 years. Once we get beyond that, we seem to see very few. There will be some, I am certain, and we have seen a few, but not many. And even in this article, when you look at the early data compared to the late data, it does appear that there is some stability of that radiographic recurrence.

In looking back at the laparoscopic randomized trial that was presented at the American Surgical Society meeting a couple of years ago, those were 6-month data showing 9% radiographic

recurrence in the mesh arm and 24% without mesh. The follow-up data have not been presented on that, but it will be interesting to see how many of those recurrences become symptomatic and how many require reoperation with mesh. We have tried to present that, most recently at the Digestive Disease Week, with our 77-month follow-up, as I mentioned.

In terms of establishing better guidelines for elective repair and looking at the likelihood of significant symptoms and whether these patients should undergo surgery or maybe would best be considered for medical treatment, a variety of indexes have been proposed to address this question. In our clinics, what we are seeing is primarily referral for symptoms, for specific problems, whether anemia, dysphagia, pain, heartburn, or whatever. Although there is no doubt that some of those patients still have symptoms after the surgery, what isn't known or is difficult to assess is the level of the symptoms. That is, results are less meaningful if you look merely at presence or absence of dysphagia, versus an index of occasional problems with hard solids. A significant number of the patients fall into that category; they are eating a regular diet but have occasional dysphagia with hard solids. I think part of that is related to the Collis gastroplasty. It does lead to a small segment of relatively amotile neoesophagus, and that can dilate with time. No doubt, the Collis gastroplasty carries some significant limitations. In lieu of getting that tension-free segment of intra-abdominal esophagus, however, it is probably the best approach to that group of patients short of further esophageal mobilization. We have not really changed our guidelines, but we are trying now to evaluate those symptoms more closely, because it is clear that some of them are present. All decrease significantly with time. And the one thing that is important to look at is the final analysis of surgical satisfaction and the final analysis of the GERD-HRQoL score being 90% improved.

So we don't have the answer to some of those questions. I can tell you that we are looking at the issue and trying to study it more carefully. We have established detailed questionnaires, and it takes significant amounts of time and money to follow each of these questions carefully with time and try to assign a score, rather than a yes or no. Most of these patients do seem very satisfied, very happy, even when they come to the postoperative clinics with some of these symptoms present.